

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Spectrum Policy Task Force)	DA 02-1311
Seeks Public Comment on Issues)	ET Docket No. 02-135
Related to the Commission's)	
Spectrum Policies)	

To: Edmond J. Thomas, Chief
Office of Engineering and Technology

REPLY COMMENTS OF ARRAYCOMM, INC.

I. SUMMARY TO ARRAYCOMM'S ANALYSIS OF COMMENTS.

ArrayComm believes that the Comments submitted fully validate the Commission's purpose in establishing the Spectrum Management Task Force. The Commission, through its Office of Engineering and Technology (OET) solicited Comments on a broad array of issues, organized into categories, so that they could be dealt with by workshops. The Comments represented a broad cross-section of interests (operators, manufacturers, users, system developers and Governmental entities).

Some saw the issues on which they commented in absolute terms; others were more cautious, recognizing that there were valid considerations on both sides of many of the questions posed. At first glance, it may appear that there would be deadlock on virtually every matter; wireless telecommunications encompasses many markets, each with its own diverse interests.

ArrayComm's further analysis, however, indicates that there are some basic points on which there is strong consensus:

- 1) There is a need for better SPECTRUM MANAGEMENT. This was a major point in ArrayComm's Comments. Even those who would rely on market forces rather than regulation see inefficiencies in the allocation, assignment and usage processes.
- 2) Improved SPECTRUM EFFICIENCY is also needed. As ArrayComm pointed out, this is really an integral part of Spectrum Management. A few commenters did not want their support for greater efficiency to be used as negating the need for additional spectrum. Still, there was a consensus that more value could be extracted from existing spectrum.
- 3) HARMFUL INTERFERENCE was regarded as a major concern by ArrayComm, particularly because it could inhibit the introduction of NEW TECHNOLOGIES. There were sharp differences of opinion about whether "harmful interference" needed to be redefined, as well as who needed protection from whom. For example, representatives of unlicensed services claimed that they needed relief from licensed services. The latter asserted that the proliferation of unlicensed services jeopardized their operations. A number of parties expressed the view that adjacent channel operations of systems, using different technology caused interference that could only be controlled at the expense of limiting the capacity/capability of their systems. As a consequence, some of these parties were resistant to the introduction of new technologies. ArrayComm addressed the adjacent channel issue in detail in its Comments, and presented additional information herein.

- 4) There was wide-spread dissatisfaction among all segments of commenters on the role of the United States in INTERNATIONAL COMMUNICATIONS. Our inability to bring about satisfactory results on issues relating to spectrum allocations in particular roused strong concern. ArrayComm shares that view. We also urged that global harmonization be encouraged, particularly when it would not impair national security and would foster domestic operations.

II. NEXT STEPS FOR THE TASK FORCE.

In order for Task Force and its workshops to deal with these broad issues effectively, there needs to be a more precise description of the views of the commenters. Most of the parties strongly favored decision-making based on market forces, rather than by government regulation. As a consequence there is general acceptance of auctions for granting licenses. The Telecommunications Industry Association ("TIA") pointed out, however: "While auctions may be an effective license assignment tool, they are not a substitute for sound spectrum allocation decisions."¹ The Commission has not specifically used auctions for this purpose. However, the technical rules or lack thereof, that govern the bands to be auctioned presuppose specific technologies. The result is that it creates incentives for auction winners to deploy solely legacy technologies (those which are already in use) rather than to deploy new technologies or even a combination of new and legacy technologies.

The introduction of new technology has several facets. One is licensed vs. non-licensed. Existing carriers want unequivocal protection for licensed services.² Itron, Inc. wants a similar

¹ See TIA Comments, page 4

² See, for example, Comments of Cingular Wireless, LLC; BellSouth Corporation.

measure of protection for unlicensed systems.³ Carriers have concern that interference is cumulative, and that the impact of unlicensed systems poses a serious threat.

This concern carries over into concerns about adjacent channel interference from dissimilar systems. BellSouth states that FDD/FDD systems operating on adjacent channels offer fewer problems than channel strangers create. Motorola goes further: "In developing a technical framework, the Commission should avoid creating the uncertainty caused by rules that allow services with very different technical characteristics to operate co-channel or adjacent channel....the Commission should avoid mixing TDD and FDD technologies within the same bands. In order for compatible operation between these technologies, severe restrictions on devices and deployments are required."⁴ There is merit to the positions both of BellSouth and Motorola. It is certainly true that like systems on adjacent channels present fewer co-existence problems than dissimilar systems create. While we would submit that dissimilar systems can function on adjacent channels, we believe that the solution that best serves the public interest is one that accords different technologies economically comparable but separate allocations. "Different Technologies" is not only FDD vs. TDD but in-plant vs. wide area, high power vs. low power. This argues for a review and revamping of the Commission's allocation policies. Rather than a piece-meal reallocation of five or ten MHz, the Commission needs to allocate sufficient spectrum to promote groups of services and technologies simultaneously. In the meantime, it still must examine its OOB rules. As the USGPS commented the present rules are not sufficiently stringent, and once modified, they need to be constantly updated.

³ See Itron Comments, pages 1-3 with specific reference to 902-928 MHz.

⁴ See Motorola, Inc. Comments, page 10.

As can be seen from the filings, the issue of spectrum efficiency is similarly complex. ArrayComm suggested an objective measurement method to obtain a spectrum efficiency value. Xtreme Spectrum, Inc.⁵ concurred with one of ArrayComm's suggestions that one way of quantifying spectrum efficiency is to use b/s/Hz/area. As an example, Xtreme Spectrum argues that the spectrum efficiency of meter readers, while low on an individual basis, can become quite efficient when their collective usage is shared in a given area. Whether one uses "area" or "cell" or "subscribers/Hz" to quantify spectral efficiency, the numerical value will depend on the type of service being provided and, to some extent, on the group of candidate technologies available to provide it. Thus, different classes of services will require different quantitative targets. With the subscriber per H/z metric, for example, the target value would be higher for voice systems than for broadband data. One advantage of using b/s/Hz/area(or cell) metrics is that they are independent of service definition.

Others resist the concept that an objective measurement for spectrum efficiency can be developed.⁶ They contend that the diversity of telecommunication offerings, starting with the distinction between voice and data systems, is too complex to be quantified. Flarion Technologies, Inc., on the other hand, in responding to Question 20(b) of the Public Notice which asks how the spectrum efficiency of different systems can be compared, claims that with a common set of assumptions and models (which would include traffic, channel, and propagation models along with such factors as geographic location), such comparisons are possible, although admittedly not easy.⁷

⁵ See Xtreme Spectrum, Inc. Comments, page 9.

⁶ See, for example, Winstar Communications, LLC in response to the Public Notice Question: Should the Commission adopt mandating spectral efficiency standards?

⁷ See Flarion, page 6.

The general tenor of the filings regarding international spectrum policies is one of frustration. As ArrayComm stated in its Comments, the ability of the United States to affect allocation changes has diminished within the ITU. The filings concurred with that assessment, with the exception of the National Radio Astronomy Observatory which advocated: ITU first, then US Rules. The difficulty is to determine the solution. One observation that ArrayComm believes has merit is to include USG representatives, through NTIA, as participants in this spectrum management/spectrum allocation process. Responsibility for telecommunication policy in this country is bifurcated today. Surely, an arrangement that would encourage, at a minimum, a common forum where such issues are discussed would have a public benefit.

The problems described above, albeit not all-inclusive, present a formidable task. However, the areas of agreement present a glass that is half-full. The fact that so many Comments were submitted indicates a willingness on the part of the wireless telecommunications community to join forces to grapple with these issues. ArrayComm is pleased to join those ranks and looks forward to actively participating.

Respectfully submitted,

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July 23, 2002